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ON THE COVER: Bill Jack Rodgers' cover
photograph, taken in the Valle Grande, is one
of several fall scenes in this month's issue.
See pages 2 through 5.

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Short Subjects

Laboratory Research Advisor Stanislaw Ulam is the author of an article titled "Computers" appearing in the September issue of Scientific American. Eleven pages in the magazine are devoted to the article which traces the evolution of electronic computers, explains how they work and how they promise to play a role in the progress of mathematics itself. Ulam also describes some of LASL's computers with which he works, such as MANIAC II and Stretch.

The AEC's research facility at Richland, Washington, will be renamed the Pacific Northwest Laboratory, effective about January 1, 1965. The installation, part of the AEC's Hanford Plant, formerly was called Hanford Laboratories. The AEC said the change of name will coincide with the transfer of the facility's operation from the General Electric Company to the Battelle Memorial Institute of Columbus, Ohio. The laboratory, which employs about 1800 persons, had been operated by G.E. since 1946.

Headquarters for the Los Alamos County Civil Defense organization has been moved to the old North Community Fire Station on Arkansas Avenue. The move, from smaller offices in the Community Center, obtains space for Civil Defense staff meetings, record storage and an assembly area for participants in the new Search and Rescue Organization, which is a part of Civil Defense. Day-to-day headquarters for CD will remain at the office of County Civil Defense Director Robert Porton in AP Building. Phone calls regarding shelter assignments or other Civil Defense information still should be made to 7-5456. The old Fire Station will remain as a Civil Defense shelter, designated FS 004.

The 1964 Los Alamos Community Chest fund drive will begin October 5 with a goal of \$48,450, Drive Chairman Roger E. Bordenkircher has announced. Funds, solicited on-the-job only, will go to 14 local youth, service and charitable organizations. Paul H. McConnell, LASL division chairman, said the four-week campaign will be conducted in the Laboratory in essentially the same way as last year. Each employee will receive a pledge card on which he may indicate one-time gifts or arrange for regular bank account deductions. In a recent memo, LASL director Norris E. Bradbury urged all Laboratory employees to contribute to the drive's success.

Former LASL Associate K Division Leader R. Philip Hammond has been named to head a new organization for the Nuclear Desalination Program at Oak Ridge National Laboratory in Tennessee. Hammond will terminate his LASL employment to become a permanent ORNL staff member. For the past two years he has been on loan to ORNL to lead preliminary studies of nuclear desalination of sea water which were first begun at Los Alamos in 1955. These studies led to the current interest in large scale nuclear desalting plants, recently described by President Johnson as a subject of national urgency.

Rolf E. Peterson last month was named a LASL Associate K Division Leader. Peterson has been a staff member at LASL since 1950, most recently as K-1 group leader. He was also at Los Alamos from 1944 to 1946 as a junior scientist with the Manhattan District. A native of Minnesota, Peterson has a B.A. degree in physics from St. Olaf College and M.S. and Ph.D. degrees from the University of Wisconsin.

FALL

The Best Time

Photographs by Bill Regan and John Young

Fall, most Los Alamos folks agree, is the best time of the year. It is the season of crisp and sometimes misty mornings, of earlier but prettier sunsets.

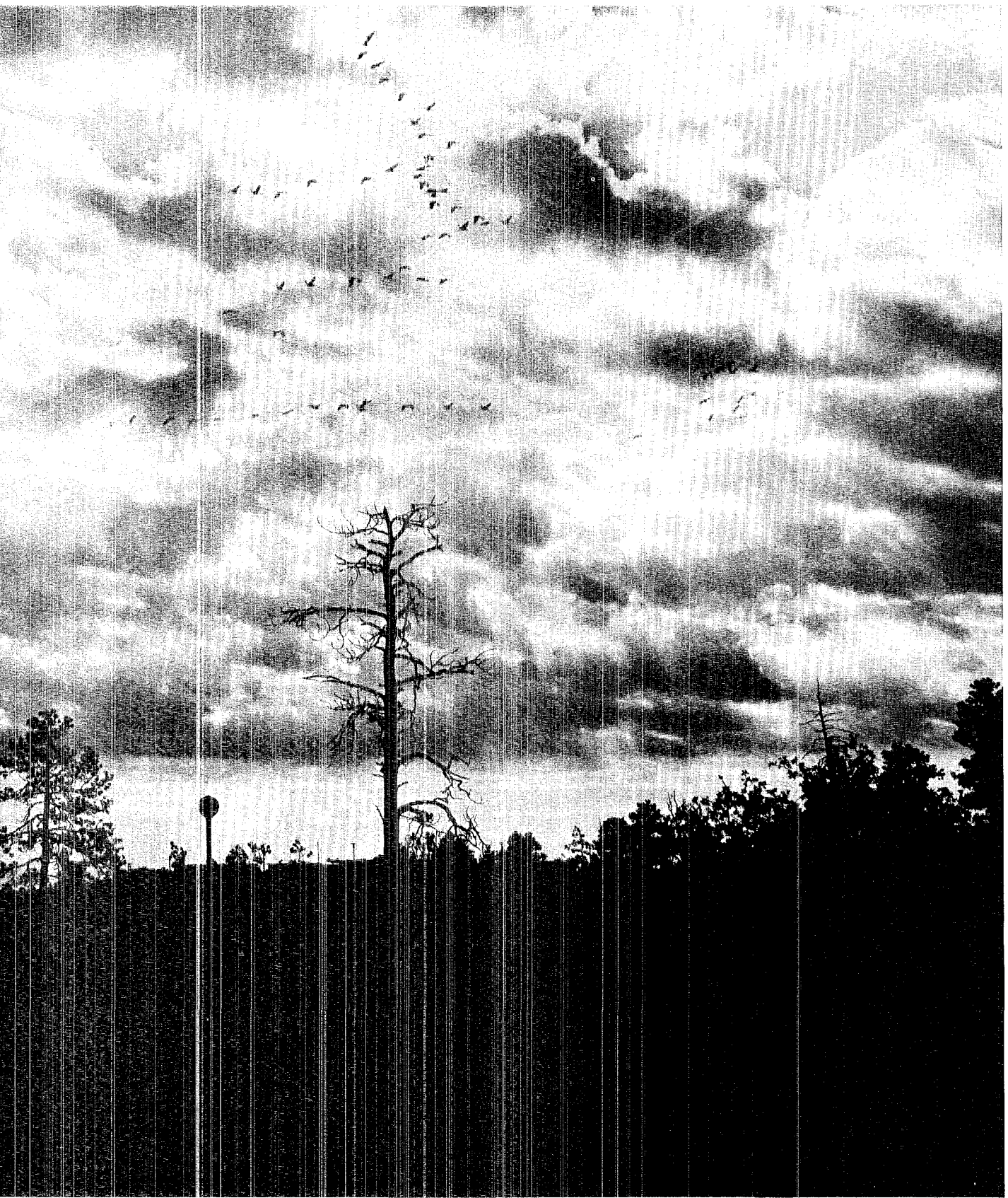
Shadows lengthen day by day until they cover the chameleon canyons of the Pajarito Plateau. The distant Sangre de Cristo Range blushes in the late afternoon sun, while overhead, against a sky that is higher than most skies, is silhouetted a flock of migrating geese, refugees from a harsher climate.

Before October is half gone comes the eruption in the Jemez that has no equal anywhere. Aspen's yellow tide descends, first in splotches and then in rivers, until entire mountainsides are ablaze.

Too soon come fall-defeating wind and bluster, when faded blooms of gold chamisa blend reluctantly with winter's first snowfall.

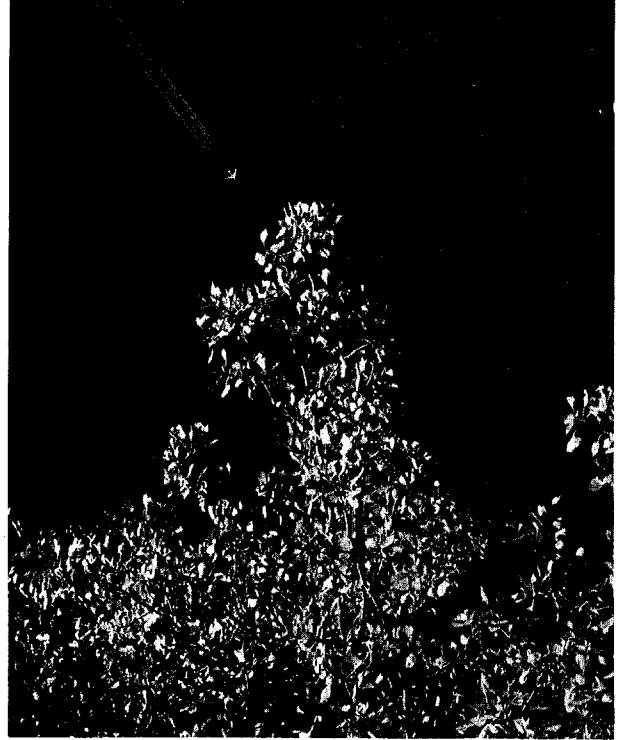
Geese, winging southward
against an autumn sky . . .





Fall . . .

The path of a passing plane contrasts against deep blue mountain sky and glistening autumn leaves.



Fall's misty mornings give way to clear skies and crisp air.



A LASL Engineer has put

Computers in the Plumbing

The fact that a pipe expands when it is heated, and contracts when it is cooled, creates a monumental set of problems for the engineers who design the weird looking array of piping associated with power plants, refineries and nuclear reactors.

Built at ordinary room temperatures, such systems must be flexible enough to expand or contract without cracking or otherwise failing when fluids hundreds of degrees above or below zero are pumped through them.

James H. Griffin, a mechanical engineer in the LASL Construction Planning Group, ENG-1, has written a new computer program that essentially solves many of these brain-curdling problems for virtually any conceivable piping system.

The program uses computers to analyze complicated piping systems and determine areas of stress and strain resulting from variations in temperatures. Drawing upon the mathematical resources and lightning speed of computers, data can be analyzed many times faster and with far more accuracy than would be possible by hand calculations. The analysis makes it much simpler for engineers to design what hopefully are fail-proof piping systems.

Griffin's boss Charles Wherrett, ENG-1 group leader, terms the program "an engineering milestone of major importance." He said it permits a full and detailed stress analysis which otherwise would be virtually impossible for the more complex piping systems.

Griffin wrote his computer program specifically to analyze the stresses which will be caused by expansion in the piping systems of new LASL reactors. The import-

ance of leakproof pipes is recognized when one considers that reactor plumbing often carries some of the nastiest stuff imaginable, like radioactive sodium, a potential hazard to men and materials.

In addition to safety, there is another consideration in designing a piping system: economy. The ideal system is flexible enough to meet all safety requirements while being as compact and inexpensive as possible.

Griffin said he first recognized the need for a computer program when he was designing piping systems for the prototype of the "Nautilus" nuclear submarine, as a Westinghouse engineer at the Naval Reactor Facilities near Idaho Falls, Idaho. On coming to work for LASL's Engineering Department three years ago Griffin's first assignment was to help design the cooling system for the Fast Reactor Core Test Facility. The FRCTF reactor is cooled by molten sodium which has temperatures ranging to 1200 degrees Fahrenheit. "It's a very critical piping arrangement," Griffin said, "and we can't afford to have a failure."

The Laboratory's UHTREX facility was also on the drawing board and, like the FRCTF, it posed difficult problems of piping design. Griffin began canvassing the country for an existing computer code to assist in the job. He found none capable of providing all the necessary data. The Mare Island Naval Shipyard, in California, did have one which would provide an excellent starting point.

With the cooperation of the Mare Island engineers, Griffin expanded and refined their code and modified it for use on a 7094 computer. The work required about 18 months.

The program was later adapted for use on a variety of computers, including LASL's super computer, Stretch. Designated MEC-21/7094, the program is contained in a "deck" of 5,300 punched cards.

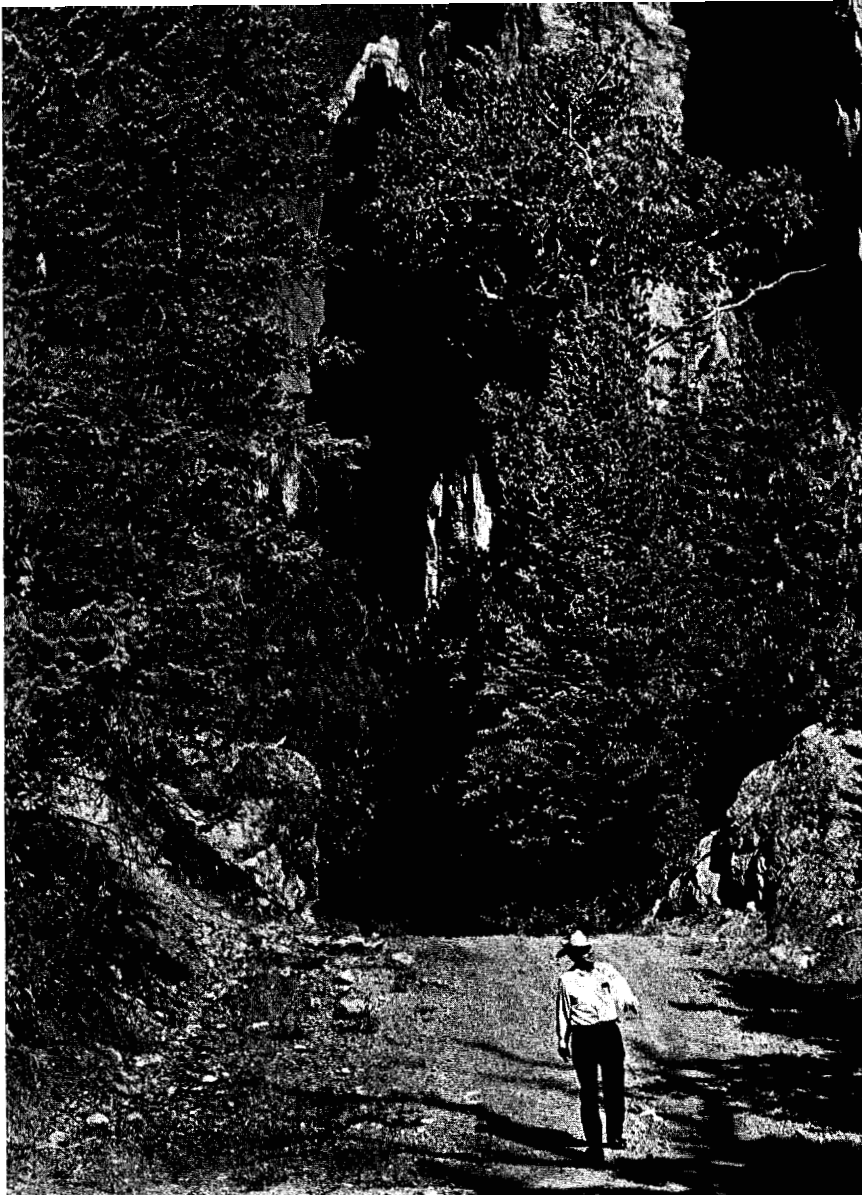
Griffin said he had practically no knowledge of how to program a computer until he began the piping flexibility code. He was taught and assisted by William Anderson, Edgar Bills, and Kathryn Crevis-ton, all of T Division.

His program enabled Griffin to analyze a piping system for Fast Reactor Core Test Facility in two weeks, a job which he estimates would have taken six months to do by hand calculations. "Really," he said, "it took two weeks and two minutes—two weeks to prepare the questions and two minutes to get the answers from the computer."

Using the computer for less complicated systems should take less than an hour of preparation, Griffin said.

The problems of contraction in systems which handle extremely cold fluids are similar to those of expansion in a high temperature system. Jan Novak, of the Laboratory's Cryogenics Group, CMF-9, is using Griffin's program to analyze stresses and strains in liquid hydrogen plumbing systems at the Nuclear Rocket Development Station in Nevada.

An official report on the program, written by Griffin, was distributed in July. It has stimulated requests for copies of the computer program from several government agencies and contractors of the AEC, including the Tennessee Valley Authority and Oak Ridge National Laboratory. The report is designated LA-2929.

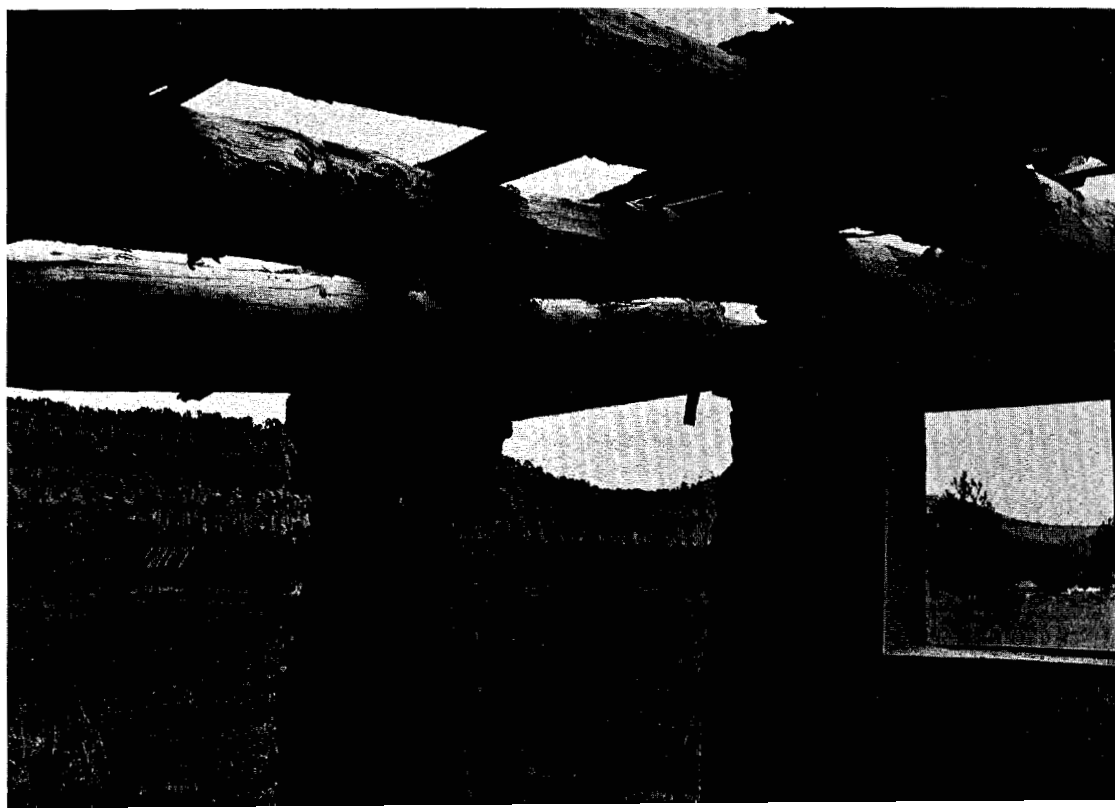


They're making
it easier to

WALK

BY JOHN YOUNG

The Narrows, in upper Guaje Canyon, where the road is squeezed between rocky cliffs. Guaje road has been made passable for ordinary vehicles and provides quick access for fire fighting equipment to the rugged back country of northern Los Alamos County.



ON THE WILD SIDE

of the county

Take a pickup or a jeep, a copy of the new Hiker's Map and some hard rations in case you get lost, and you can drive from Guaje Pines cemetery to Abiquiu without going near a highway. (THE ATOM accepts no responsibility for busted springs and ruptured crankcases.)

This back country shunpike is a by-product of a large-scale forest and wild life conservation program being carried on in the wild and rugged north end of Los Alamos county by the local AEC's Project Support branch. Conservation Officer Homer C. Pickens is directing the work, which includes roads, trails, signs, check dams, reseeding and reforestation.

Part of a long-range national program for the conservation of renewable natural resources, the work is being assisted by the U.S. Forest Service, State Forestry Department, Soil Conservation Service and the State Game and Fish Commission. Protection and restoration of the watershed and its natural forest cover, and rehabilitation of the wild life of the area are the principal objectives.

By rebuilding old forest trails and wood roads into graded roads suitable for truck travel, the heretofore inaccessible parts of the county are being made accessible to fire fighting equipment to stop forest and brush fires in their infancy. Many foot and horse trails also have been restored to usability.

At the same time, the roads and trails have opened up large areas of forest wilderness to hikers and hunters. An elaborate system of signposts should make it difficult to get lost, and aid searchers to find anyone who does. At key intersections, signposts carry addi-

tional information in laminated posters. For example, one at the intersection of Alamitos Mesa fire road and the old Pajarito trail reads:

To the west is the Alamitos Mesa fire road extending 2½ miles distance to an old sawmill site. From there a trail extends one mile west into Agua Piedra Canyon and connects with Agua Piedra Trail near the Los Alamos county line.

From the County line, it is 2 miles southeast down Agua Piedra Canyon Trail to Guaje Canyon Trail to Guaje Canyon scout camp.

This marker is located on Pajarito Trail at the road junction to Archuleta Field which is located ¼ mile to the east.

If you are going south across Guaje Canyon it is 5 miles to Los Alamos via trail.

It is one mile north to Pine Springs Ranger Station and 2 miles on northeast to steel gate on Los Alamos county line.

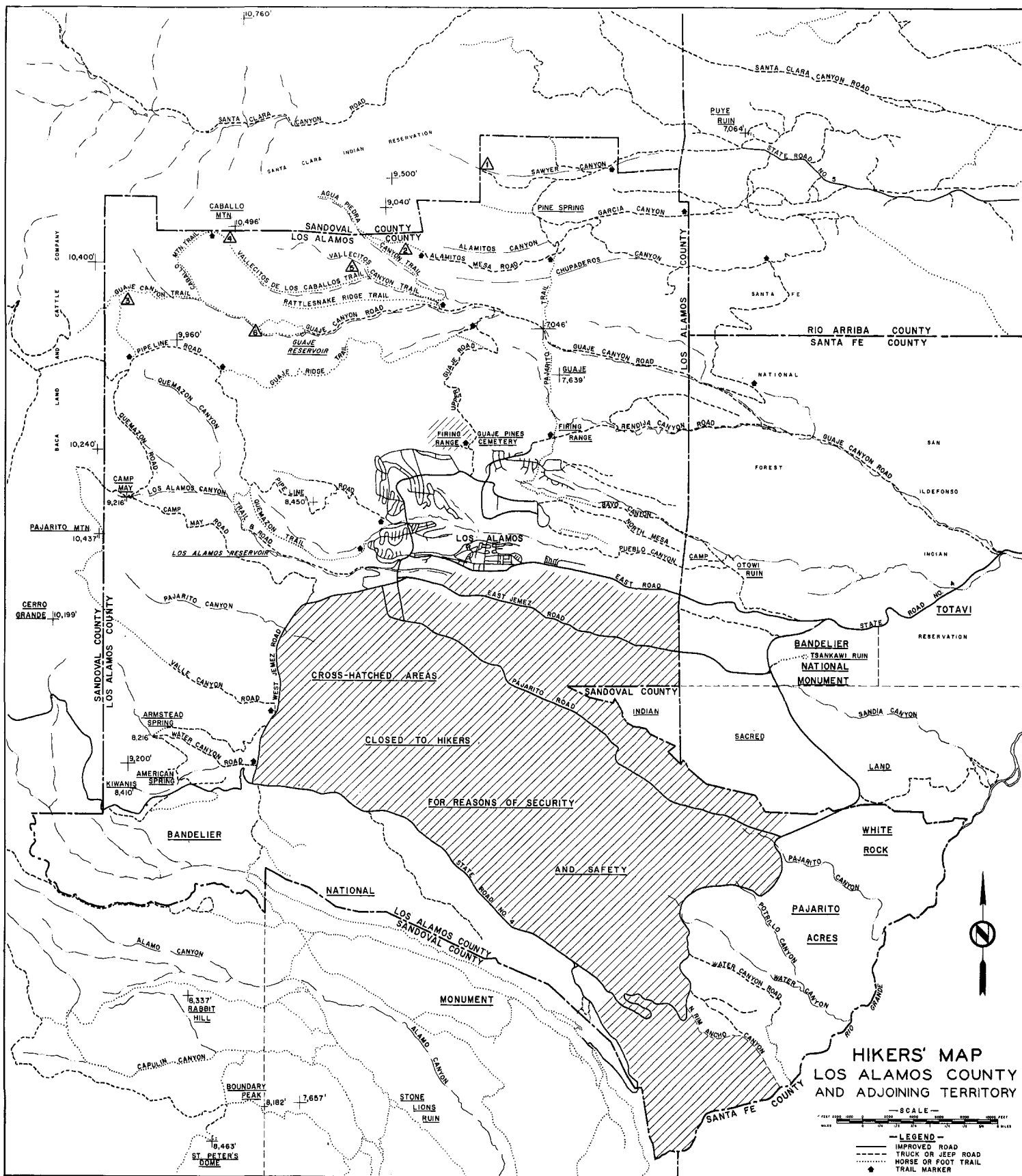
It is 12½ miles via Pine Springs truck trail and copar pumice mine to Los Alamos. Please close all gates to protect area from trespass livestock.

Most recently, Pickens has started installing check point signs, assisted by AEC communications people under Richard Kennedy in cooperation with the County Civil Defense organization. These points were selected because they can be used for line-of-sight radio communication with Los Alamos directly, or by way of Bear Mountain or St. Peter's Dome fire lookouts. They serve several purposes—as a jumping-off place and rallying point for search and rescue crews looking for lost persons or downed aircraft, for radio communication in case of fire, or as a place for a lost person to sit and wait to be rescued. All the check points will be manned first in the event of any such emergency. Similar check points are being set up in Bandelier National Monument by the Park Service.

So far, the program has brought about the construction of more than 50 miles of road, 40 miles of

At Left: An old homestead cabin on Garcia Mesa provides several fresh-air views of the cliffs and surrounding country. The mesa is one of several being re-seeded to provide forage for deer as a part of the AEC's county-wide conservation program.

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WILD SIDE . . .

continued from page 9

trails, installation of 50 signs (some of which have already been shot up or smashed by vandals), and the building of four large reservoirs and 25 smaller check dams to stop flooding and hold water for wildlife.

Ten miles of fence along the north boundary of the county has been rebuilt to keep out trespassing cattle which have been overgrazing the fields and competing with the wild life. All stray cattle have been removed. Some large fields, mostly abandoned homesteads, have been reseeded and replanted with trees and forage plants on an experimental basis, and also to encourage wild life. Tracks of deer and turkey already are plentiful around the new water holes.

The long-abandoned Forest Service cabin at Pine Springs has been rehabilitated for weekend camps by Los Alamos Boy Scouts, who also are fixing up an old log homestead cabin on Garcia Mesa.

An important part of the program, keyed to the Santa Fe National Forest's overall watershed protection setup, is timber management, including an inventory of all timber resources, looking toward selective harvesting of mature timber, pole cutting for vigas, thinning and pruning of dense stands of young

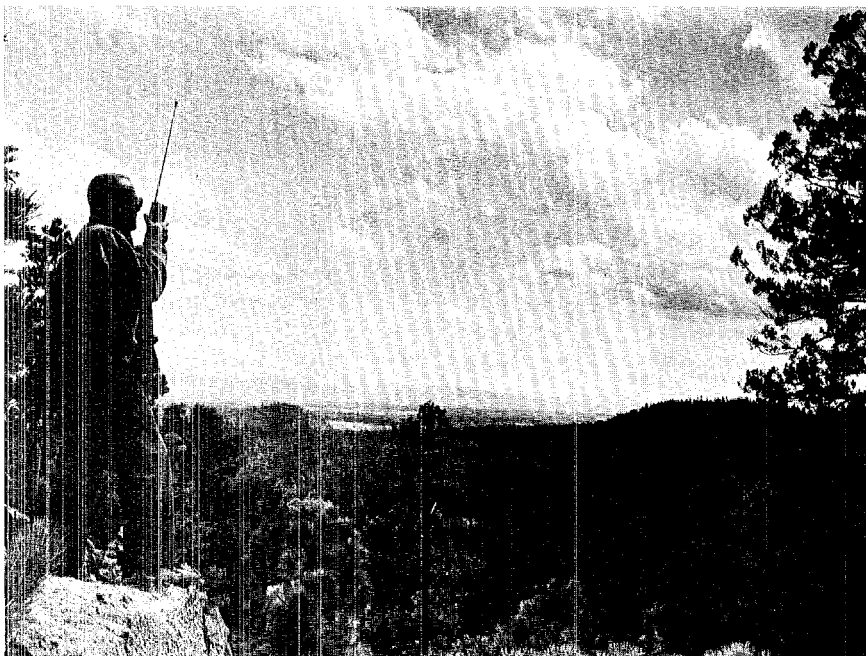
pine, and combatting various bugs and beetles. The Forest Service is playing an active part in this work, which also is being carried on in the Forest Service areas adjacent to the county boundaries.

The roads, trails and check points as well as principal geographic locations are detailed in a new edition of the Hiker's Map, now available at Zia Company Engineering or Homer Pickens' office at the AEC area office.

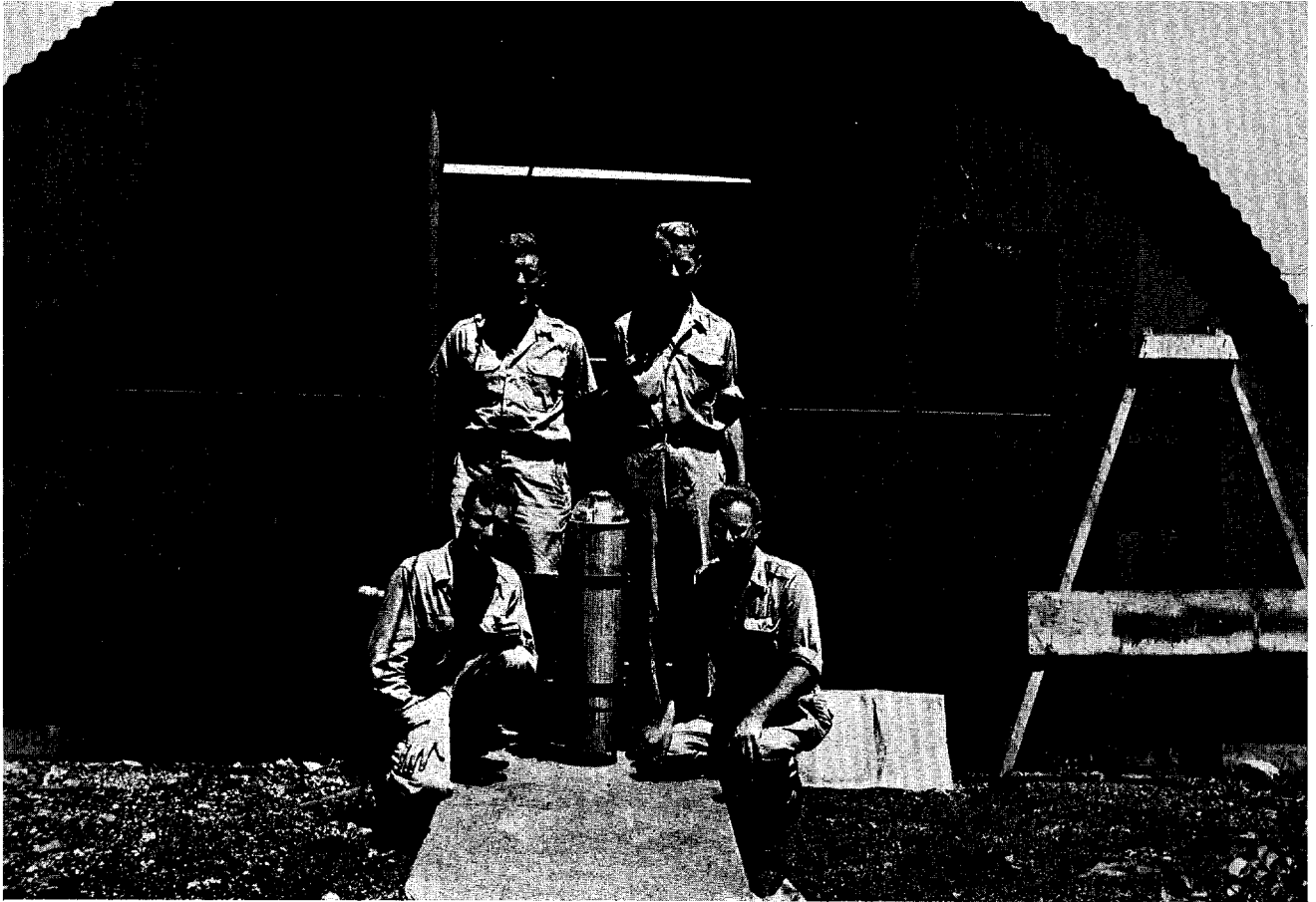


Homer Pickens, county conservation officer for the AEC's Los Alamos area office, operates a posthole digger while his crew, consisting of Robert Porton, Henry Miranda and Richard Kennedy, manhandles signposts.

Right: Robert Y. Porton, Los Alamos County Civil Defense Director, checks out a walky-talky radio to test communications between Los Alamos (in middle distance) and one of the several check points being set up in the rugged northern end of the county for fire protection and search and rescue operations.



FACING PAGE: Six new multi-purpose checkpoints in rugged northern Los Alamos County are indicated by triangles on Hiker's Map.



Harold Agnew, standing left, with Professor Luis Alvarez, standing right, and Lawrence H. Johnston and Professor Bernard Waldman, kneeling left to right, were photo-

graphed in 1945 on Tinian Island. With them is a Bangmeter later dropped by parachute over Hiroshima for recording the force of the blast from the first atomic bomb.

DATE OF MISSION: 6 AUGUST 1945

Bombs: Special.

Date of Mission: 6 August 1945.

Two entries which are part of the wording on a brown, mimeographed sheet of paper make it a unique and interesting new exhibit in LASL Scientific Museum.

The paper is one of the original strike orders issued to pilots of the 509th Composite Group, U.S. Air Force, stationed on Tinian Island during World War II. The target was not indicated on the strike order. It was Hiroshima, Japan.

Harold Agnew — W Division leader—was in the plane that flew alongside the famed Enola Gay into the target area. Agnew kept

the copy of the strike order in his files through the years. On his return to Los Alamos after a two-year assignment in Europe he turned the strike order over to the museum as an addition to the pictorial history file.

From Public Relations picture files a photograph taken on Tinian Island just prior to the flight shows Agnew with Professor Luis Alvarez, Professor Bernard Waldman and Lawrence H. Johnston holding a Bangmeter—a device to help measure the power of the blast. The Bangmeter was dropped on a parachute about the same time the atom bomb was released.

Many news stories which followed said the bomb had been dropped by parachute, probably because the Bangmeter and its chute fell just before the detonation. Professor Alvarez wrapped a note written in English around the outside of the Bangmeter. It was addressed to a Japanese scientist with whom Alvarez had worked in Berkeley prior to the war. The note explained what the weapon was, and urged the scientist to appeal to the Japanese emperor to surrender.

The picture and the copy of the strike order are being mounted for public examination and will soon be on display in the Museum.

KIWIS PROVE HARMONIOUS COUPLE

LASL Reactors Pair Up to Pave the Way
To Clustered Nuclear Rocket Engines

BY EARL ZIMMERMAN

Two nuclear reactors placed side by side have been operated simultaneously at Los Alamos Scientific Laboratory, opening the way to the tremendous thrust of "clustered" nuclear rocket engines.

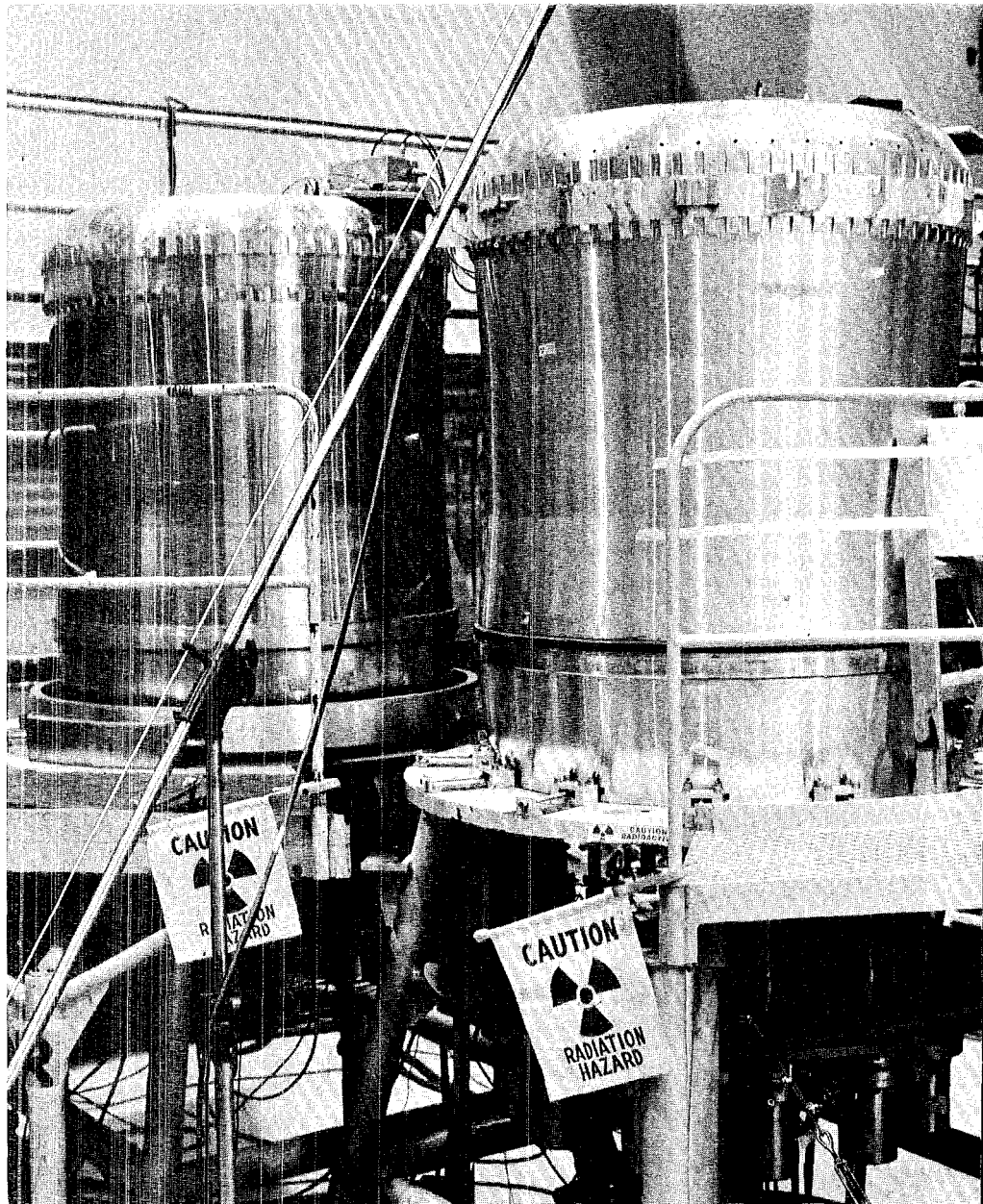
Bert Helmick, Robert Seale and Curtis Chezem, physicists in the LASL critical assemblies group, conducted the experiments with two Kiwi-type reactors, those developed by LASL for use in the Project Rover nuclear rocket program.

The experiments apparently put to rest long-standing apprehension about the stability of nuclear reactors operated in proximity, and the possibility of a runaway reaction.

First successful twin criticality was achieved at 2:30 p.m. August 26 at Pajarito Site. The initial experiment was conducted with the reactors about 12 feet apart. Since then, they have been inched closer until they were successfully brought

Continued on next page

These two Kiwi-type reactors made nuclear history last month in a kiva at Pajarito Site. They were brought to criticality at the same time, placed side by side. The achievement by N-2 physicists opens the way to the tremendous thrust of "clustered" nuclear rocket engines.



Coupled Kiwis . . .

Continued from preceding page

to dual criticality with their burnished aluminum pressure shells little more than a foot apart.

Instead of familiarity breeding contempt, the LASL scientists reported, the reactors performed in a mutually influencing but completely harmonious manner. By careful adjusting both were brought into stable reactive balance.

"They were truly coupled," Helmick said, "two reactors behaving as a single reactive system."

Because of cooling and radiation shielding problems at the labora-

tory site, the power level of each reactor was held below 1000 watts, although each is capable of a million times that figure.

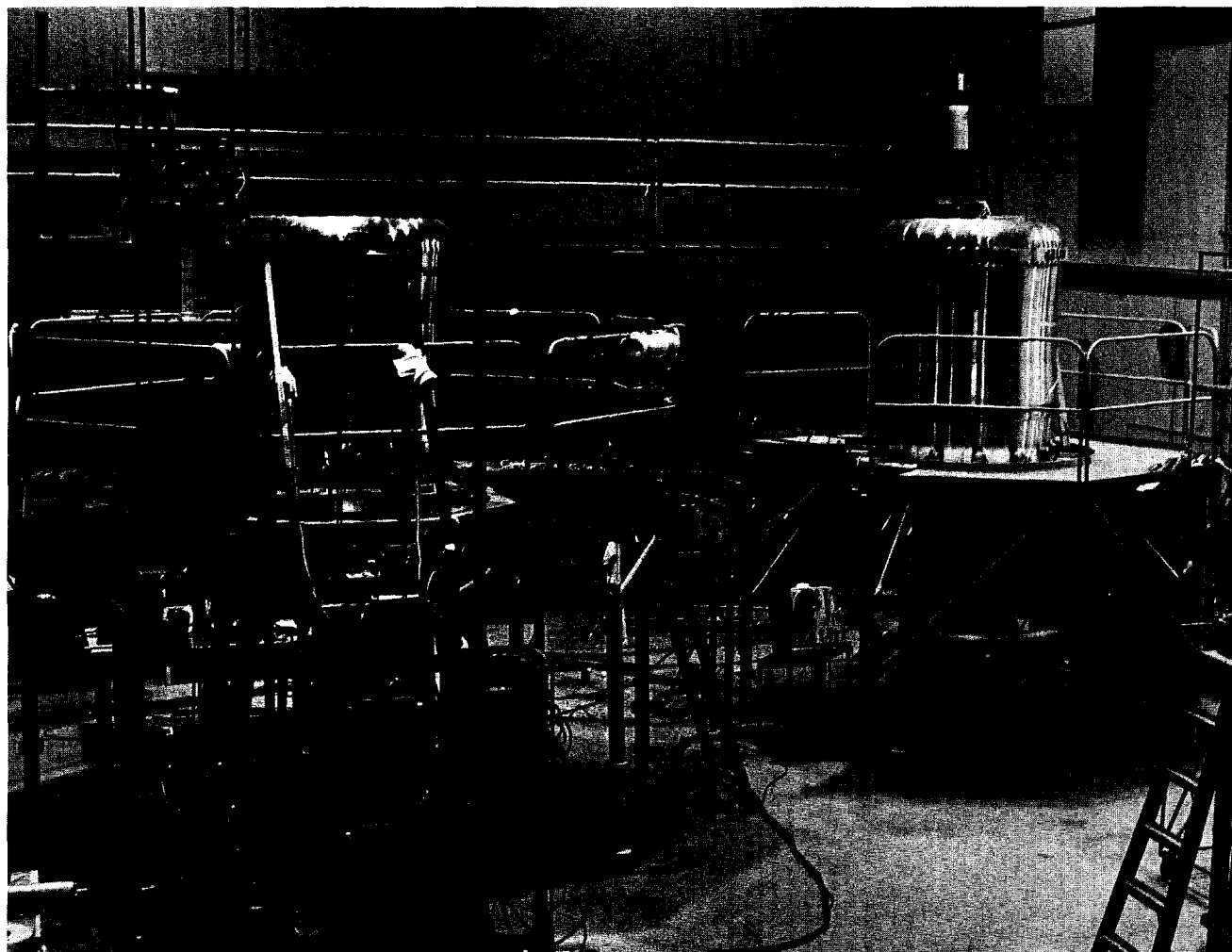
Both reactors used in the coupling experiments are similar to the Kiwi B4-E that was tested with great success on two occasions within the past month at the Nuclear Rocket Development Station in Nevada. One of the reactors is named PARKA (Pajarito Research Kiwi Assembly) and is the same design as that tested in Nevada. The other, almost identical, is called TNT, for the name of an experiment, Transient Nuclear Test, in which it will be used later this year.

The 8½-minute Kiwi B4-E "hot run" of August 28 and the successful restart of the same reactor on

September 10 are viewed as a warranty of the reactor-heat exchanger principle for nuclear rocket propulsion, which offers double the specific impulse—the ratio of thrust to the amount of propellant used—of the best chemical engines.

The successful operation under coupled conditions indicates there is no serious neutronic limit on the construction of the nuclear engines needed for the exploration of deep space. "It is apparent," Helmick declared, "that we can cluster two, three, or as many as physical size permits."

Nuclear engines thus possess the clustering potential of their chemical counterparts, and since clusters of small engines are the equal of a single large engine, the savings in



The experiments started in August with Kiwi reactors 12 feet apart.

future development costs may be enormous.

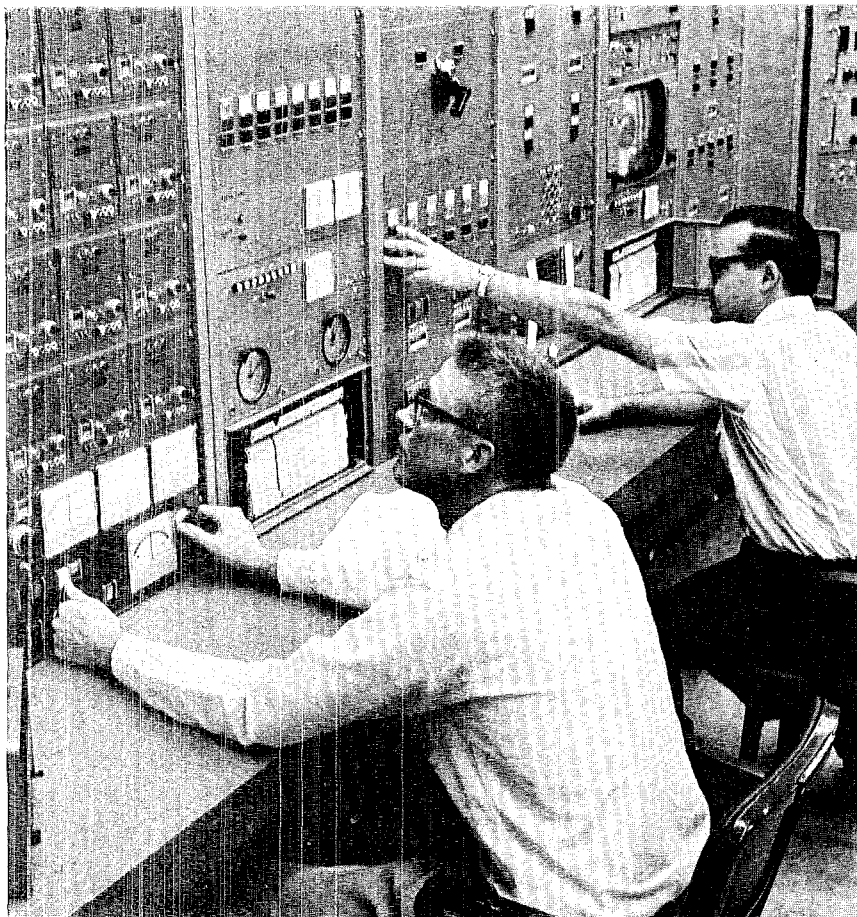
Clusters of chemical engines will provide the power for the first moon mission flights. Success of the twin reactor operations has already made it possible for scientists to predict with theoretical assurance that clusters of nuclear engines based on the large Phoebus series of reactors now in development at Los Alamos will have the thrust capability for round trip missions to Mars and Venus.

For the coupling experiment, Seale worked the remote control panel for the TNT reactor, Helmick sat next to him with duplicate controls for PARKA. The control room is a quarter mile from the reinforced concrete kiva (pueblo Indian for "ceremonial chamber") in which the reactors were located. Although closed circuit television supplied a close-up picture of the six-foot-high reactors on their stands, flashing lights and quivering needles of radiation counting devices were the necessary measure of the silent and otherwise unseen ferment created by the uranium and graphite fuel elements within the reactors.

A double package of "scram" safety controls stood guard in the kiva, ready to automatically stop the experiment if the nuclear reactions should threaten to go out of control.

Scale started the experiment, easing out control rods on 'TNT' to commence the fission processes that move a reactor toward criticality and a sustained, chain reaction. Almost at once there was activity on the PARKA radiation monitors, confirming that fission neutrons from the still sub-critical 'TNT' were leaping from that unshielded reactor to the other, penetrating its core and piercing the uranium nuclei there.

Then Helmick pulled the control rods for PARKA. Computer calculations had predicted what would happen, almost exactly. PARKA reached critical earlier than it would have "alone," that is, with-



LASL physicists Bert Helmick (left) and Robert Seale start their coordinated N-2 control room procedure to achieve first "coupled" operation of reactors. The experiments started in August with Kiwi reactors 12 feet apart.

out feedback from a second fissioning source of neutrons. There was also an immediate sympathetic reactivity increase in TNT.

Both reactors were shut down and Scale started 'TNT' again, this time sending its fission rate a little higher than before. PARKA stirred, and Helmick brought it critical even sooner.

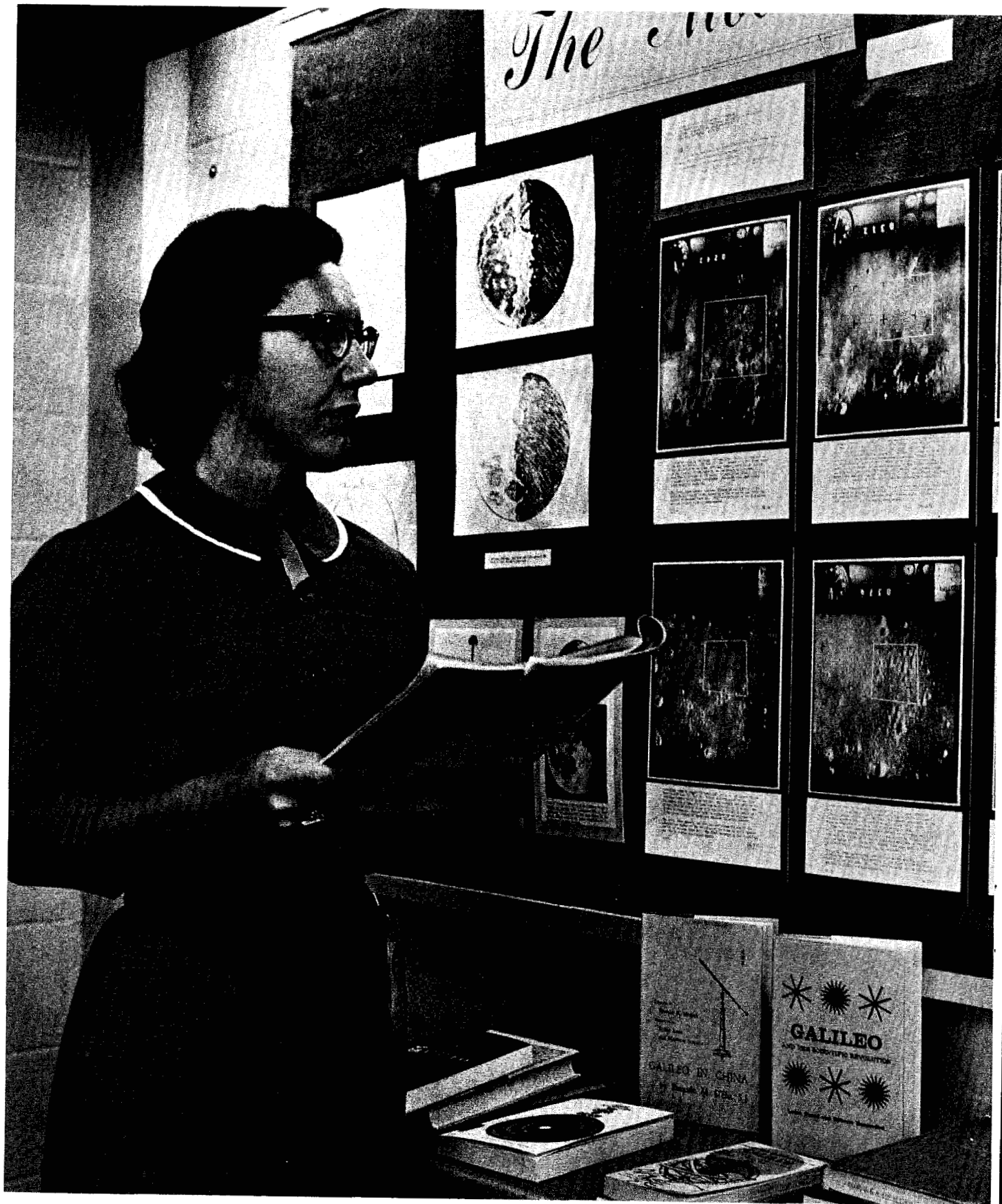
So it went, step by step, until both reactors were critical simultaneously. Instruments were reporter and interpreter: Dual criticality, both reactors at the same power level, and the condition reached below the point normal for individual operation.

Subsequent experiments were conducted moving the reactors progressively closer. Results were consistent. Each time one reactor was

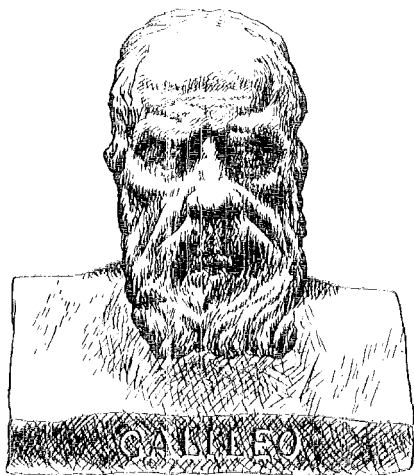
adjusted there was a response in the other. The coupling became more pronounced as the reactors were moved closer, but always was completely controllable, the scientists found.

Aside from their significance for nuclear rocketry, the coupling experiments may be useful to designers of very large reactors, of the type used for the production of electric power. Such massive furnaces sometimes have problems due to different sections of their cores behaving as if they were separate reactors.

Results of the Pajarito kiva experiments can be a basis for calculating coupling effects within single reactors, Helmick said, and may suggest designs that will minimize or make beneficial use of this nuclear phenomenon.



Galileo To Be Lecture Subject



FROM A STATUE BY CONTORNI
FLORENCE, TORRE DEL GALLO

"Father of Modern
Astronomy and
Experimental
Physics" Born
400 Years Ago



Dr. Duane H. D. Roller, University of
Oklahoma, will discuss Galileo at
public meeting October 22.

Galileo is popularly remembered as the "inventor" of the telescope, which he wasn't, but he *can* be accurately described as the "father of modern astronomy and experimental physics."

As the first man to use the telescope to study the skies, Galileo amassed evidence to prove the earth revolves around the sun and is not the center of the universe, as had been believed. This got him

into trouble with the Inquisition and resulted in house arrest for the last eight years of his life.

Galileo clashed headon with Aristotle's logico-verbal approach to the nature of man and the universe and advocated what was known as mathematical rationalism with the insistence "the Book of Nature is written in mathematical characters."

So it's no surprise that this year, the 400th anniversary of Galileo's birth, is especially remembered in such centers of cogitation and research as Los Alamos.

To mark the quadricentennial, a public lecture has been scheduled for October 22 with a Galileo scholar as speaker, and a commemorative display has been assembled in the Administration Building Main Library.

Dr. Duane H. D. Roller, Associate Professor at the University of Oklahoma and a frequent writer and speaker on the history of sci-

ence, will address the public meeting at 8 p.m. No badges will be necessary.

Roller is familiar at Los Alamos. He was a Colloquium lecturer in 1957, 1958, 1960 and 1963, spoke on "Galileo vs. Authoritarianism" in a Federation of American Scientists program at the Little Theater in 1956, and twice was a Unitarian Church guest, speaking on Joseph Priestley and the deGolyer Library science history collection at the University of Oklahoma.

The LASL Library exhibit was prepared by Gretchen Riese of D-2. It features Galileo's drawings of the surface of the moon (he was the first to declare it was rough) and compares those drawings with the remarkable lunar surface photos taken by the Ranger VII spacecraft last summer. The Ranger VII photos were supplied for the exhibit by Jet Propulsion Laboratory, directors of the Ranger program.

FACING PAGE: LASL Library has display marking Galileo quadricentennial. Exhibit was prepared by Gretchen Riese, (shown here) and includes Ranger VII photos of moon.



"Flying laboratory" pulls up after instrument calibration flight took it near Los Alamos last summer.

The Diagnostic Air Force

Nearly 40 from LASL Will Take Part In Pacific Test Readiness Exercises

Photographs by Bill Regan and Earl Zimmerman

Nearly 40 LASL staff members and technicians are taking part in test readiness exercises, without nuclear explosions, scheduled between mid-October and early November in the vicinity of Johnston Island in the Pacific.

The exercises are to check out one of the safeguards outlined to the Senate by the Atomic Energy Commission and the Department of Defense when the Limited Nuclear Test Ban Treaty was approved in 1963. The purposes are:

- 1) To evaluate the current capability of the DOD-AEC to conduct atmospheric tests, if necessary, using airborne diagnostic techniques and
- 2) To assess the adequacy of preparations and plans for the attainment of the prescribed readiness posture.

The Laboratory's overseas role involves people from eight groups in J Division, a representative of Supply and Property and a radiologist and meteorologist from H Division.

William Ogle, Alternate J Division Leader, is scientific advisor to the exercise task group and scientific deputy to Joint Task Force 8, the military designation for units conducting the exercise.

The LASL contingent is based at Honolulu.

The airborne instrumentation represents the AEC-DOD effort to avoid or reduce large and expensive land-based installations should it become necessary to conduct atmospheric tests in the future. It has resulted in the establishment of a sort of "diagnostic air force," con-

sisting of three unusual airplanes.

One of the flying laboratories has been assigned to LASL. The others are assigned to the Sandia Corporation and the Lawrence Radiation Laboratory at Livermore. All three planes normally are based at Kirtland Air Force Base at Albuquerque.

The planes are jammed with scientific gadgetry, if \$17,000,000 in remodeling and instrumentation can with respect be called gadgetry. The planes started life as the C-135, the military version of the Boeing 707 four-jet transport. Modified at the General Dynamics plant in Fort Worth, Texas, the planes are flown

by crews assigned to the Special Weapons Center at Kirtland.

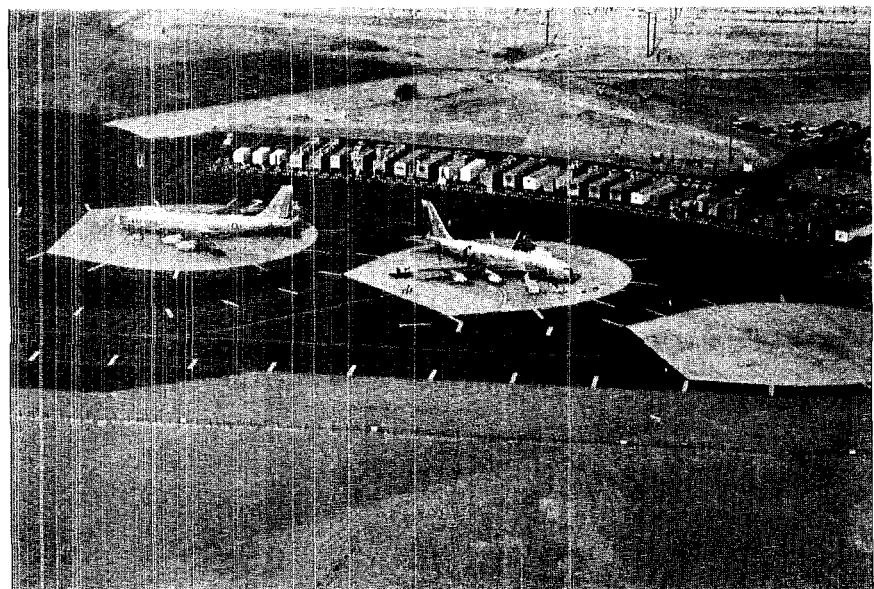
Although much of the on-board instrumentation is classified, the planes are officially described as carrying "optical and electromagnetic instrumentation capable of collecting data from atmospheric detonations."

The huge planes have a takeoff weight of 277,000 pounds, are 134 feet long and have a wingspan of 142 feet.

For the simulated tests, a B-52 bomber will drop the "ballistic container." Another 16 aircraft will be involved in various support missions, such as weather observations,

Continued on next page

"At home," flying laboratories occupy a specially-guarded area at Kirtland AFB in Albuquerque. LASL plane is in center. LRL plane was on test flight when photo was taken. Band of trailers contains offices and support equipment.



Diagnostic Air Force . . .

Continued from preceding page

air sampling, and emergency rescue service.

Last month the AEC and DOD announced the exercises with the following statement:

Over a year ago, August 23, 1963, the Atomic Energy Commission and the Department of Defense out-

lined to the U.S. Senate safeguards to the Limited Nuclear Test Ban Treaty.

These included:

"The maintenance of the facilities and resources necessary to institute promptly nuclear tests in the atmosphere should they be

deemed essential to our national security or should the treaty or any of its terms be abrogated by the Soviet Union."

Early this year it was decided to have, by January 1, 1965, the capability to proceed with tests of nuclear weapons within two or three months from the date of any abrogation of the test ban treaty.

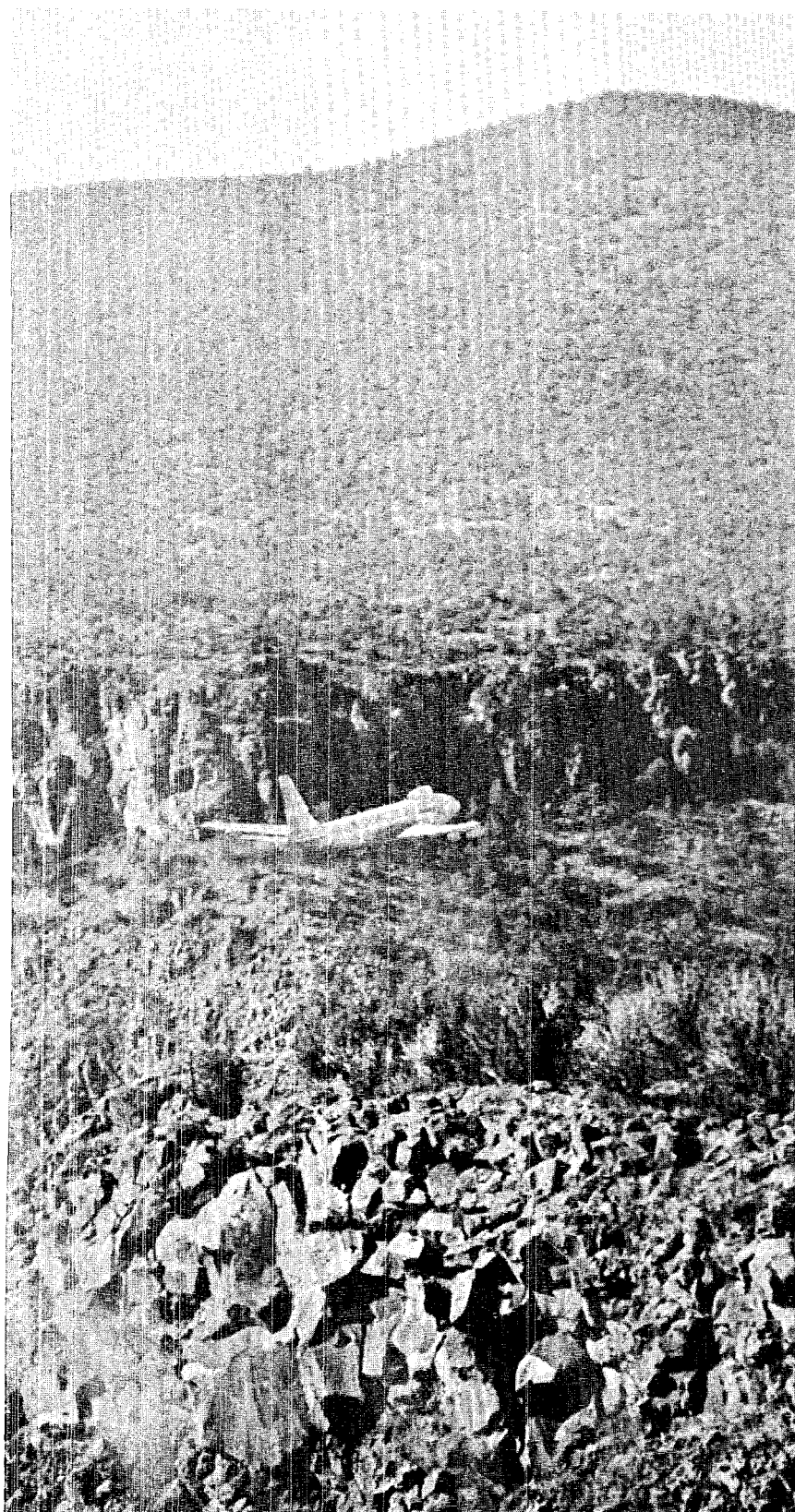
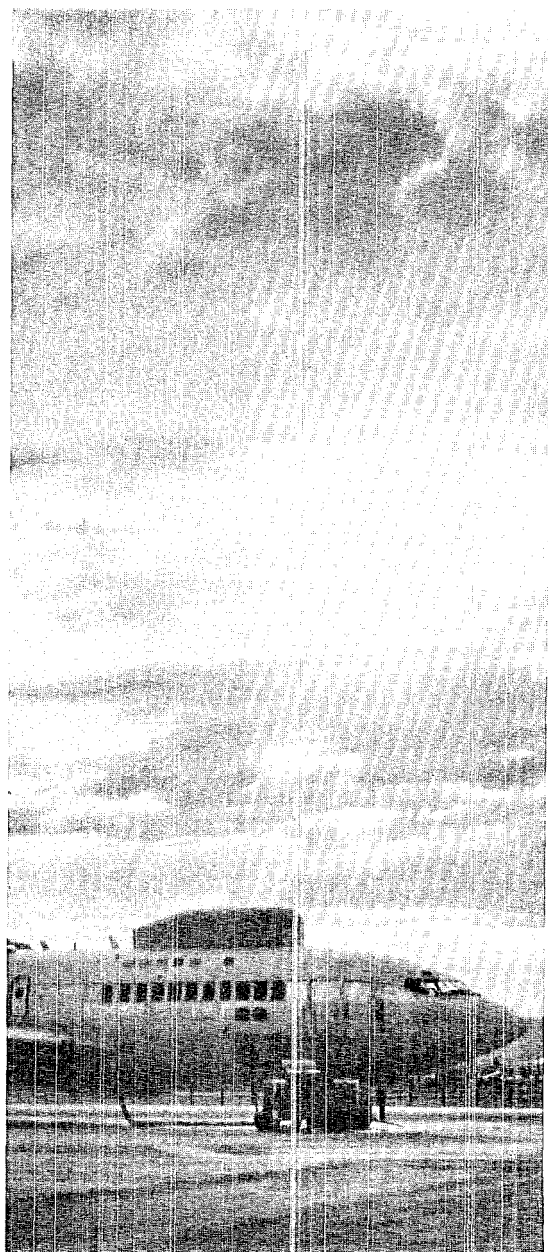
While such readiness is necessary in the interest of national security, the U.S. position has always been

Huge jet aircraft (LASL's is at left) are kept in constant readiness.



that it earnestly hopes there will never be an abrogation of the treaty, and that its capability to resume such testing will not have to be exercised.

In this spirit measures have been taken to implement the safeguards described to the Senate a year ago. These include air and sea exercises, without any nuclear explosion, to be carried out about mid-October in the vicinity of Johnston Island in the Pacific. The exercises are expected to be concluded in early November.



Looking more like a small model than huge jet, C-135 roars down White Rock Canyon of the Rio Grande.

The Technical Side

First Research Reserve Seminar in Applied Research (presented by Office of Naval Research) Sandia Base, Aug. 18 (Classified Meeting):

"Weapons Testing" by Alvin C. Graves, J-DO.

American Chemical Society Symposium on Molecular Beams, Chicago, Sept. 1:

"Some Computer Studies Related to Molecular Beam Experiments" by Don Bunker CMF-4 (Invited paper.)

Central New Mexico Section of the American Chemical Society, University of New Mexico, Albuquerque, Sept. 23:

"Cryogenics and Nuclear Propulsion" by A. F. Schuch, CMF-9.

Howard Hughes Lecture, Hughes Aircraft Co., Culver City, Calif., Sept. 17:

"The Rover Program" by Keith Boyer, J-DO.

Symposium on Coordination Chemistry, Tihany, Hungary, Sept. 14-17:

"Infrared Raman Studies of Mixed Cyanide-Halide Complexes of Gold" by Llewellyn H. Jones, CMF-4.

Meeting on Fast Reactor Control Rod Drives, Germantown Md., Sept. 16-17:

"Control Element Drive Mechanisms for LAMPRE I" by Rolf E. Peterson, K-DO.

Conference on Photographic and Spectrographic Optics sponsored by International Commission for Optics, Tokyo and Kyoto Japan, Sept. 1-8:

"Automatic Lens Design by Statistical Analysis" by Berlyn Brixner, GMX-9.

1964 Opacity Conference at Kirtland Air Force Base, Sept. 3-4: (Classified)

"A Radiation Transport and Hydrodynamics Computation with Application to Fireball Behavior in Bluegill, Tighrope, and Teak" by John Zinn and Frederic E. Fajen, both J-10.

"Calculation of the Line Effect on the Opacity for Medium-Z Elements" by Walter F. Huebner, T-DOT.

"On the Numerical Solution of Photon Transport Problems" by Burton Wendroff, T-1.

Conference on Plasma and Electromagnetic Waves, Saclay, Paris, France, Sept. 10-12:

"Plasma Interaction with a Spatially Rotating Static Magnetic Field" by James A. Phillips, P-14.

American Ceramic Society Meeting, Electronics Division, Philadelphia, Pa., Sept. 15-17:

"Mechanism of Adherence of Tungsten to Bodies Containing Yttria" by Robert E. Cowan and Stephen D. Stoddard, both CMB-6.

"High Temperature Seals for Thermionic Converters" by Robert E. Cowan CMB-6.

New Hires

James J. LaRotonda Denver, Colorado, ENG-2,

Edward E. Godin, Albuquerque, T-7,
LeRoy Samuel Wampler, Irwin, Pa., SD-1,

Jeanette H. Tegtmeier, Los Alamos, P-11 (Part Time),

Paul Michael Kraemer, Philadelphia, Pa., H-4,

Delman Andrew Law, House, N.M., W-1,

Hans Max Ruppel, Hope, Arkansas, T-12,

Lawrence Ray Gurley, Chapel Hill, N.C., H-4,

Thomas Jerry Crain, Carterville, Ill., SD-2,

Kitty Parnes, Los Alamos, CMB-1,

James Paul Clayton, Albuquerque, CMB-3,

Antonio David Espinoza, Santa Cruz, N.M., SP-4.

Merlin Duane Enger, Williston, North Dakota, H-4,

John G. McConnell, Jr., Little Rock, Arkansas, J-11,

Mary Sue Wooten, Los Alamos, PUB (Casual)

Barton Lee Jones Carlsbad, N.M., N-1,

Julia Marie Hardin, Richland, Wash., H-4,

Daniel G. Lucero, Chamita, N.M., M&R,

Patricia P. Ulibarri, Santa Fe, N.M., ENG-1,

Camille Finnegan Bidwell, Los Alamos, H-4 (Rehire),

John A. Dussart, Trinidad, Colo., SD-2,

Wilbur Knight Brown, Oakland, Calif., P-3,

Helen Anita Boise, Los Alamos, GMX-11 (Rehire, Part Time),

Gerard Szalay, University Park, N.M. ENG-4,

James L. Winner, Albuquerque, CMB-3,

E. Brooks Shera, Chicago, Ill., P-2,

Byron E. Thompson, Henderson, Texas, W-1,

Louanne S. Connors, Los Angeles, Calif., SP-1A,

Oliver W. Simmons, Los Alamos, CMB-1 (Casual).

Roy David Hastings, Ponce City, Oklahoma, GMX-11,

Larry L. O'Connor, Cedar Rapids, Iowa, GMX-7,

Richard Lee Stice, Omaha, Nebraska, SP-6,

Benjamin J. Barnhart, Winchester, Indiana, H-4,

Rowand R. J. Chaffee, El Paso, Texas, H-4,

Weltzin Buckman Blix, Camden, N.J., P-10,

Michael Doyle Coburn, Austin, Texas, GMX-2,

Dorothy L. Calvin, Los Alamos, T-7.

WHAT'S DOING

LOS ALAMOS HIGH SCHOOL POOL: Fall schedule for public swimming. Adults 35 cents, students 15 cents.

Monday	7:30 p.m. to 9:30 p.m.
Tuesday	7:30 p.m. to 9:30 p.m.
Wednesday	7:30 p.m. to 9:30 p.m.
Saturday	1:00 p.m. to 6:00 p.m.
Sunday	1:00 p.m. to 6:00 p.m.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information on specific hikes.

Sunday, October 11, Upper Crossing to Obsidian Ridge and return. Leader, Ken Ewing.

Saturday, October 17, Tschicoma to Polvadera. Leader, Al Petschek.

Sunday, October 25, Alamo Rim via Corral Hill. Leader, Liz Gittings

Saturday, October 31, Upper Crossing to Jim Young's apple orchard. Leader, Bob Day.

FILM SOCIETY: Civic Auditorium. Films shown 7 and 9 p.m. unless otherwise noted. Admission by season ticket or 90 cents single admission.

Wednesday, October 21, "The Silence." Ingmar Bergman drama.

LOS ALAMOS CONCERT ASSOCIATION: First concert of season Friday, October 9, 8:15 p.m., Civic Auditorium; Leonard Pen-nario, pianist. Admission by membership ticket.

INTERNATIONAL FOLK DANCE CLUB: Open to the public. Meets every Tuesday, 8 p.m., Recreation Hall.

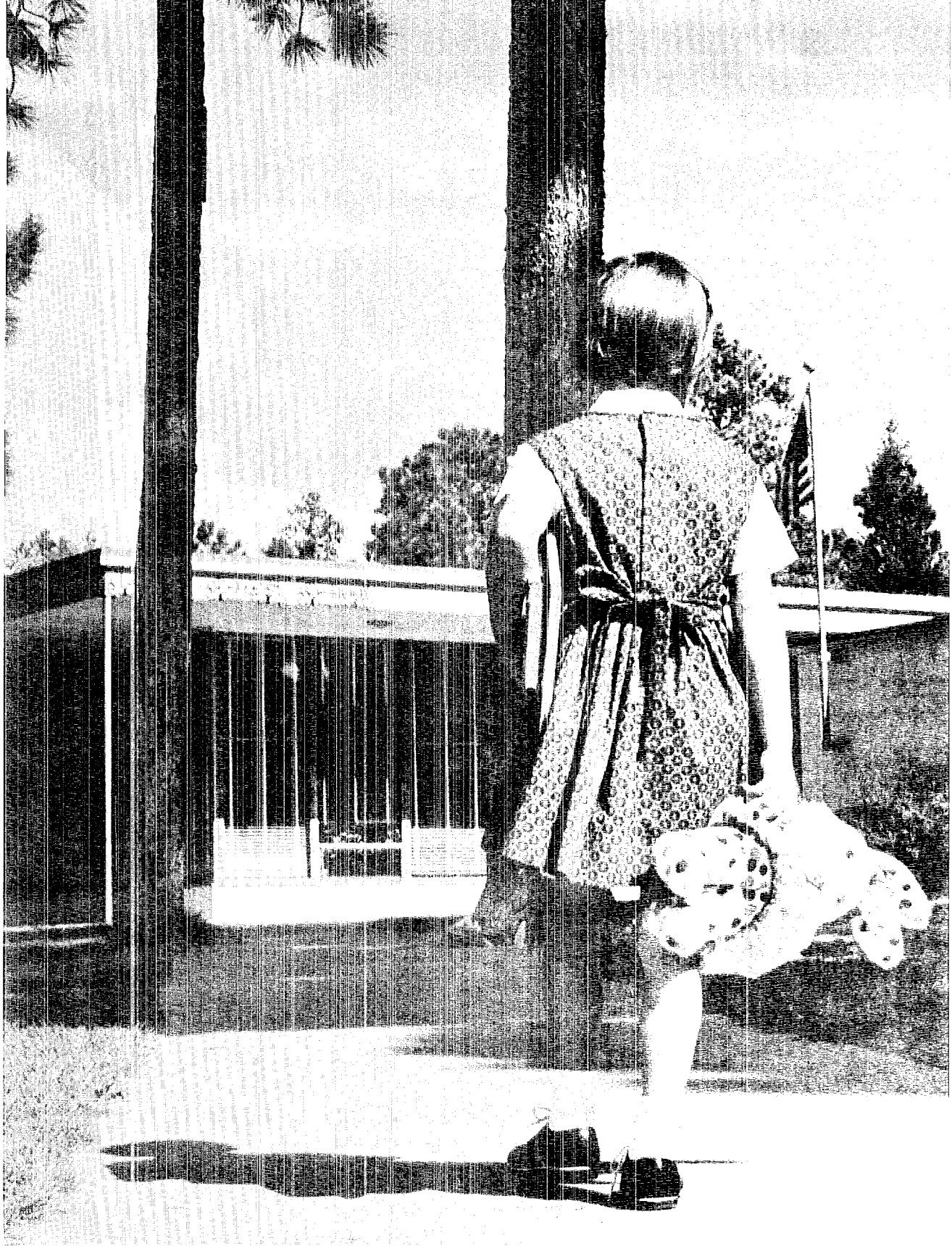
SWIMMING CLUB OF LOS ALAMOS, INC., Membership open to adults interested in swimming. Club meets every Sunday, 7 to 9 p.m.



*Pause For
A Pose
As the
Kiwi Cools*

LASL's "Rover boys" had just finished putting the Kiwi-B4-E experimental reactor through its second successful test in two weeks. The two-minute September 10 sequel to the reactor's longer original power run marked the first such re-start in the Kiwi program. Recognizing the day may prove an historical one in the development of the nuclear-propelled rocket, most of the operating personnel and official observers posed for the above photograph.

Those not otherwise identified, are LASL personnel. Seated are Cliff Boehmer and Harry Otway. Standing, left to right, are Elmer King, James Henshall, Ted Vandegrift, Bob Holman, Don Grosenick, Don Goetting, John Moore, Joe B. Hill, Ed Logan, Bill Blevins, Don Frick of E.G.&G., Bill Waldman of E.G.&G., Murlin Nutter, Keith Woodruff of E.G.&G., Joe Connell, Vern Zeigner, Roderick Spence, Duncan Curry, Bobby Strait, John Hafer of Westinghouse, Herbert Knight, John Rink, Frank Durham, Don Collins, Keith Boyer, and Harold Finger, Space Nuclear Propulsion Office.



It helps to have a friend along when you are five years old and on the way to your first day in kindergarten. Bill Jack Rodger's camera subjects are his daughter, Sona,

and her stuffed polka dot rabbit. Now, a month or so since the photograph was taken, Sona still takes her books to school but the rabbit is a kindergarten dropout.

Henry T. Motz
3187 Woodland
Los Alamos, New Mexico

